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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/724,882

12/02/2003

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08/30/2006

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EXAMINER

DESAI, ANISH P

ART UNIT

PAPER NUMBER

1771

DATE MAILED: 08/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/724,882

Applicant(s)

UETANI ET AL.

Examiner

Anish Desai

Art Unit

1771

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 10-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 03/22/06.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. The Applicant's arguments in response to the Office action dated 01/11/06 have been fully considered.
2. All of the art rejections are maintained.

#### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yuji et al. (Japanese Patent Publication No. 2002-110245) in view of Nagou et al. (US 5,238,735) substantially as set forth in 01/11/06 Office action.

Yuji et al. teach a lithium ion secondary battery which uses a solid polymer electrolyte (see Abstract, page 6) and a liquid crosslinkable composition for the solid electrolyte (Paragraph [001], page 15). The liquid crosslinkable composition for the solid electrolytes comprises radically polymerizable monomers of oxetane ring containing monomer and epoxy group containing monomer (Paragraph [0011], Page 24). Moreover Yuji et al. teach a battery separator (Paragraph [004]). Additionally, Yuji et al. teach that the liquid crosslinkable composition containing oxetane group and epoxy group is injected into the airtight container, which has units such as electrodes and separator (Paragraph [0020], pages 32 and 33). The liquid composition infiltrates into gaps such as electrode and a separator. Regarding claim 2, the oxetane ring

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containing monomer of Yuji et al. contains 3-oxetanyl group (Paragraph [0013], page 25). With respect to claim 3, the liquid crosslinkable composition contains the other radically polymerizable monomer (Claim 2, page 7). Regarding claim 4, Yuji et al. teach that the quantity of the radically polymerizable monomer with oxetane ring and another radically polymerizable monomer is 5 to 50% by weight (Claims 2 and 3, Page 7). With respect to claim 5, Yuji et al. disclose that the quantity of the radically polymerizable monomer having epoxy group and the other radically polymerizable monomer is 5 to 50% by weight (claims 4 and 5, page 8). Regarding claims 6 and 7, Yuji et al. teach the claimed 3-oxetanyl group containing (meth) acrylate formula (I) on page 25 and claimed epoxy group containing (meth) acrylate formula (II) on pages 26 and 27 respectively. Regarding claim 8, Yuji et al. teach the claimed formula III and IV on Pages 27 and 28.

Yuji et al. are silent as to teaching the porous film with a porosity of 20-95% and a thickness of 3-50  $\mu\text{m}$ . However, Nagou et al. teach a microporous shaped articles such as microporous films that can be used as battery separators (Column 1, lines 9-11). The microporous films of Nagou et al. exhibit highest performance as battery separators (Column 5, lines 9-10) and have improved mechanical strength (Column 7, line 59). The porosity and the thickness of the microporous film of Nagou et al. are from 20 to 90% (Column 1, lines 57-58) and 5 to 200  $\mu\text{m}$  (Column 5, lines 54-55) respectively. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the microporous film of Nagou et al. with the porosity of 20 to 90% and thickness of 5 to 200  $\mu\text{m}$  as a battery separator in the

lithium ion secondary battery of Yuji et al., motivated by the desire to provide a battery separator with improved mechanical strength.

***Response to Arguments***

4. Applicant's arguments see pages 2-3 filed on 06/12/06 have been fully considered and but they are not persuasive.

The applicant argues that JP'24[5] in paragraphs 0004 and 0005 teaches that it is not preferable to use a separator or nonwoven fabric supporting thereon a polymer to be swelled with an electrolyte. Thus, JP'245 teaches away from using a separator or a nonwoven fabric. The applicant asserts that there would be no motivation to use microporous film of Nagou as a separator in JP'245. The examiner respectfully disagrees. The examiner finds no teaching in paragraphs 0004 and 0005 that suggests "it is not preferable to use a separator or nonwoven fabric". Instead it seems that the paragraph 0004 of JP'245 teaches use of separator or nowoven fabric by reciting "APPLY TO SEPARTOR OR NONVOWN FABRIC ETC. IN WHICH ELECTROLYTE CONTAINING CROSSLINKABLE MONOMER OLIGOMER, ETC. IS INSERTED BETWEEN ELECTRODE SURFACE OR POSITIVE, AND NEGATIVE ELECTRODE". Additionally, in paragraph 0020, JP'245 teaches use of a separator.

The applicant argues that JP'245 does not disclose "substrate supporting thereon a crosslinking polymer having plural cation-polymerizable functional groups in the molecule" or "porous film substrate". The examiner respectfully disagrees. In paragraph 0020 of JP'245, it is disclosed that the liquid crosslinkable composition containing oxetane group and epoxy group is injected into the airtight container, which

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has units such as electrodes and separator. The liquid composition infiltrates into gaps such as electrode and a separator (0020), which can be interpreted as the liquid composition is in contact with a separator and thus reads on "film substrate having supported thereon". The recitation "having supported thereon" is a broad recitation, therefore the difference between the prior art and the presently claimed invention are not obvious. With respect to applicant's argument regarding the porous film substrate, the secondary reference of Nagou et al. is relied upon to teach the porous film substrate. Additionally, there is a reasonable expectation of success in combining JP'245 and Nagou et al. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the microporous film of Nagou et al. with the porosity of 20 to 90% and thickness of 5 to 200  $\mu\text{m}$  as a battery separator in the lithium ion secondary battery of Yuji et al., motivated by the desire to provide a battery separator with improved mechanical strength. Accordingly, art rejections are maintained.

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**Conclusion**

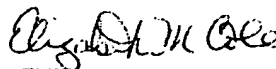
**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anish Desai whose telephone number is 571-272-6467. The examiner can normally be reached on Monday-Friday, 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on 571-272-1478. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
ELIZABETH M. COLE  
PRIMARY EXAMINER

APD